

**NSDI COOPERATIVE  
AGREEMENTS PROGRAM  
METADATA TRAINING & OUTREACH ASSISTANCE PROJECT**

**Final Report**

Miami-Dade County,  
Information Technology Department  
June 2015

## OVERVIEW

**Date:** May 15, 2015

**Agreement Number:** G12AS200000

**Project Title:** Metadata Trainer and Outreach Assistance

**Report:** Final

**Organization:**

Miami-Dade County,  
111 NW 1<sup>st</sup> Street, 29<sup>th</sup> Floor,  
Miami, Florida 33128-1994  
[www.miamidade.gov](http://www.miamidade.gov)

**Principal Investigator:**

Bibi Oung  
(305) 275-7781  
[bzk@miamidade.gov](mailto:bzk@miamidade.gov)

**Collaborating Organizations:**

- a. Miami-Dade County, Water & Sewer Department  
3071 SW 38th Avenue, Room 331, Miami, FL 33146
- b. Miami-Dade County, Permitting, Environment and Regulatory Affairs Department  
701 NW 1st Court, Room 3-111, Miami, FL 33136
- c. Miami-Dade County, Office of Emergency Management  
9300 NW 41st Street, Miami, FL 33178
- d. Sustainability, Planning and Economic Enhancement Department  
111 NW 1st Street, Miami, FL 33128
- e. Miami-Dade County, Parks and Recreation Department  
275 NW 2nd Street, Miami, FL 33128
- f. Miami-Dade Transit  
701 NW 1st Court, Suite 1200, Miami, FL 33136
- g. Miami-Dade County, GIS User Group  
5680 SW 87th Avenue, Miami, FL 33173
- h. City of Miami  
444 SW 2nd Avenue, 5th Floor, Miami, FL 33130
- i. City of Doral  
8300 NW 53rd Street, Suite 200, Doral FL 33166
- j. City of South Miami  
6130 Sunset Drive, South Miami, FL 33143

## EXECUTIVE SUMMARY

Miami-Dade County successfully completed the requirements for the Metadata Training and Outreach Assistance grant awarded in 2012. Our staff attended the 2012 Esri International User Conference, attended several NOAA metadata training, and FGDC webinars, and researched ArcGIS metadata information and processes. Narratives were submitted to Esri International User conference, South Florida GIS Expo, and Miami-Dade County GIS Users Group in 2013, and were accepted. This allowed staff to present a high-level presentation to GIS managers, developers and users audience.

The training aspect of the grant resulted in the creation of an ArcGIS 10.2 Metadata Training and Outreach Assistance power point presentation, ArcGIS 10.2 Metadata Standards and Guidelines with step-by-step instructions, and ArcGIS 10.2 Metadata Data Collection and Sample metadata documents. Training followed FGDC Metadata Workshop Core Curriculum and FGDC/ISO metadata standards for both, the presentation and half-day hands-on workshops. Fourteen workshops were conducted, with over 131 attendees from 20 external agencies and 13 departments, 56 training hours, and an overall 88% satisfaction rate. One-on-one metadata training and assistance was also provided, and a [GIS Metadata](#) webpage was created.

The most rewarding outcome is the professional relationships and collaboration that developed between the agencies, departments, and the GIS staff in an effort to create better data and metadata. Hence, Miami-Dade County successfully completed the final stage of this grant with an awesome attendance and feedback rate.

## PROJECT NARRATIVE

Upon confirmation that Miami-Dade County was awarded the 2012 National Spatial Data Infrastructure Cooperative Agreements Program (NSDI CAP), Category 1: Metadata Trainer and Outreach Assistance in April 2012, beyond the rejoicing phase, our GIS Metadata Administrator approached the grant in the following manner in order to fulfil the grants requirements efficiently and effectively beyond the delays experienced due to pressing assignments:

- 1) **Obtained the latest GIS Metadata knowledge** by attending the 2012 Esri International Conference metadata related workshops to acquire current metadata industry standards and information. Our staff attended several NOAA online workshops. The metadata PowerPoint presentations that are published by [FGDC](#) were reviewed to expand on the training material. We also utilized ArcGIS Desktop Metadata documentations and explored ArcGIS metadata styles more in-depth. Current information was obtained through FGDC Quarterly webinar and Metadata Workgroup, especially related to International Standard of Organization (ISO) status.
- 2) **Identified presentation forums** that would allow us to present and train individuals within a drivable distance to minimize expenses. As a result, abstracts were submitted to the 2013 South Florida GIS Expo in West Palm Beach, Florida, the 2013 Esri International User

Conference in San Diego, California and the Miami-Dade County GIS User Group meeting of September 2013, all of which were accepted. Initially, Esri did not accept the abstract for this grant, but this was overcome by sharing the time with the GIS Inventory grant, the abstract of which was accepted. These events allowed Miami-Dade County to present a high-level format that targeted GIS managers, developers and users. Presentations of *Metadata for Managers, Developers and Users*, were prepared according to FGDC Metadata Workshop Core Curriculum criteria. Each forum allowed the GIS Metadata Administrator an opportunity to address questions and provide metadata guidance from over 18 years of metadata experience and establish professional relationships.

- 3) **Prepared training materials** from the vast amount of information collected from various sources. It was challenging to condense the amount of valuable materials from the aforementioned sources to a half day training session. It was equally challenging to effectively inform and teach attendees how to complete metadata with step-by-step instructions without making it overwhelming and discouraging. As a result, a *GIS Metadata Training & Outreach Assistance* PowerPoint presentation was created using the National Geospatial Data Assets, the National Spatial Data Infrastructure, Geospatial Metadata Standards, CSGDM & ISO Standards Overview, Metadata tools and whether to use ISO or CSGDM to address topics such as, What is Metadata, the Value of Metadata, and Metadata quality. The content adheres to FGDC Metadata Workshop Core Curriculum guidelines.

The *ArcGIS 10.2 Metadata Standard and Procedure* manual covered the following: An overview of metadata, ArcGIS environment settings, how to upgrade metadata from 9.3 to 10x, how to view metadata, how to create thumbnails. It covered the functions of the description tab, and the edit options. The guide explained the different metadata layouts, and the 3 metadata sections were explained (Overview, Metadata & Resource). The common metadata tools & usage and the tools contained within the ArcGIS Metadata Toolkit 10.2.1 were included.

The *ArcGIS 10.x Metadata Form* was used to create metadata using sample data provided during the training workshops, and another was completed with basic metadata and used as an example to facilitate the creation of metadata. Attendees used the form during the hands-on exercise to create the metadata. The sample metadata was designed to trigger questions and discussion to solidify the learning experience, since it was not entirely complete.

In addition, an *ArcGIS Metadata Overview* was created to aid external agencies attendees with workshop and travel justification.

Each attendee received a hard copy of *ArcGIS 10.2 Metadata Standard and Procedure* manual package with a blank and completed ArcGIS 10.x Metadata form along with the *NSDI Training Workshop Evaluation Form* package. Attendees were asked to complete the evaluation form before leaving, but not all did; one hundred and eleven were completed out of one hundred and thirty-one attendees.

- 4) **Created webpage** content for the [GIS Metadata](#) webpage and sent to the web analyst for publishing, and followed-up by publishing the materials used during the training workshop. The PowerPoint presentation is being enhanced to compensate for the live interaction and will be posted once completed.
- 5) **Identified training locations.** Workshops were conducted in three locations: 1) Miami-Dade County, Information Technology Department, Innovation Lab, 2) Steven P. Clark Center (Government Center) and 3) Florida International University. These locations were selected because they were all equipped to conduct hands on training and were available and convenient to expected attendees.
- 6) **Coordinated and identified attendees.** Determining how to broadcast the metadata workshop to city and county partners posed some challenges since we did not have a comprehensive list of all municipal GIS contacts. This was resolved by asking known contacts to forward the metadata workshop invitation. We eventually discovered an online list of city contacts at the [Miami-Dade County League of Cities](#) website, which was used to reach out to all thirty-four of Miami-Dade County cities. On a positive note, the workshop was emailed internally using the county's ArcGIS/Citrix distribution list, which consists of hundreds of users. The invitation was sent to all known city and Miami-Dade County User Group contacts. GIS managers throughout the county were identified and emailed, and the majority chose to attend the workshop.

**Challenges:** On the challenging side, creating the *ArcGIS Metadata Standards and Procedure* manual required some consideration on how to present the wealth of information in a condensed form. We wanted to ensure that the manual was not a source of discouragement by being thick and laced with too much information. Instead, we took a sleek and concise approach that focused on just what is needed to get the job done. Links to supplementary information were provided in the PowerPoint slide, so users could expand on a subject matter, if need it. For many, metadata creation seems unimportant and can be a huge deterrent, so the approach was crucial and needed to convey importance and ease of effort. Hence, the manual provided an overview of ArcGIS metadata environment to provide a comprehensive overview and understanding of the process.

Another challenge was processing reservations for the eighteen workshops. With limited resources we found it difficult to maintain normal productivity while coordinating the training sessions. This was resolved by utilizing the county's Metroblog platform, which facilitated in the booking process. It required meeting with the system administrator for a demonstration on how to configure and use the software. This allowed us to publish and manage the workshop's attendee registration and cancellation in an automated and systematic manner. Internal staff was able to reserve the date and time of the workshop that best fits their schedule at their convenience alleviating the manual process. This was a valuable asset as it saved us a lot of time. Since, we were still new to the platform rescheduling and cancelation had to be processed manually.

Lastly, we encountered a few obstacles with the Innovation Lab training room computers, a couple machines rebooted randomly during training and users were unable to connect to the network due to

computer profile or password issues. These occurrences happened despite testing the computers and user accounts in preparation of the workshop. This issue was reported to the Innovation lab administrator for resolution.

**Outcome:** Miami-Dade County accomplished the following objectives: we presented at the 2013 Esri International User Conference, the 2013 South Florida GIS Expo and to the Miami-Dade County GIS User Group. We conducted fourteen 4-hour workshops totaling 56 hours with an 88% satisfaction rate, and provided one-on-one training assistance via phone and in person. Attendees came from 20 external agencies and 13 departments with a total of 181 registrants, mostly within the tri-county area. The workshop provided an overview of metadata, value, purpose, current ISO and County metadata, policies and more, and provided hands-on training on the creation and update of metadata. Published metadata was demonstrated along with GIS Data standards and tips.

To top it off, new business relationships were established and collaboration with agencies have improved, which is of great value to all involved.

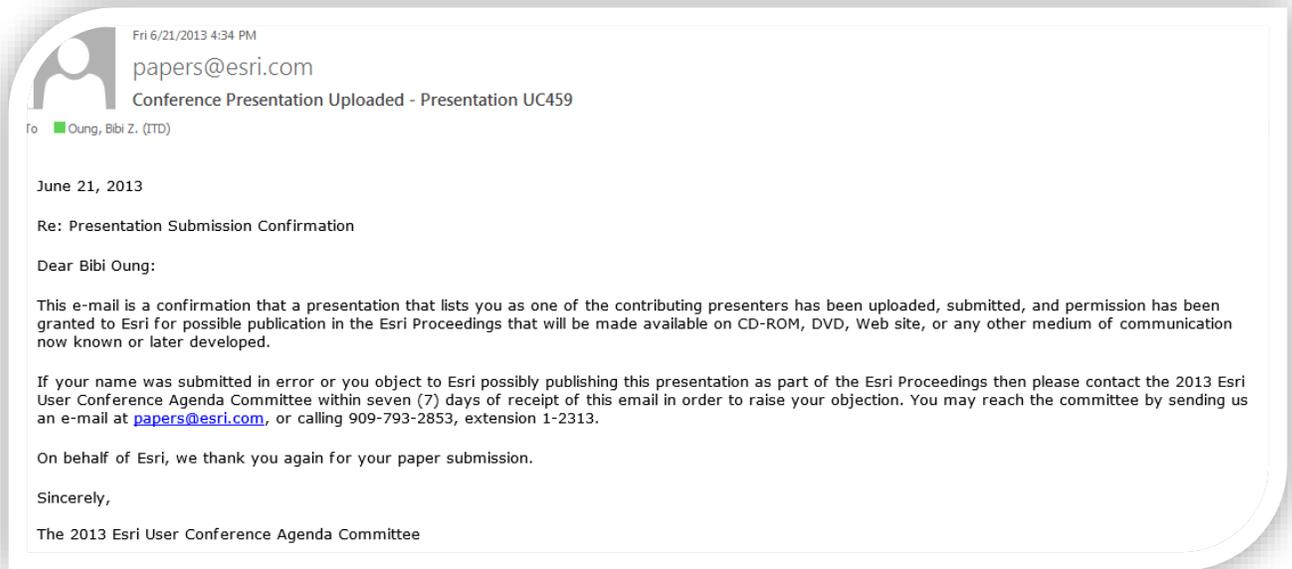
## TRAINING AND OUTREACH ASSISTANCE

**Indicate the number, duration, and venue (indicate if Internet/Web supported, i.e. Webinar) of workshops conducted, as appropriate.**

Overall, a total of 131 out of 181 registered individuals attended one of fourteen 4-hour *Introduction to GIS Metadata training workshops* held at three different locations: Miami-Dade County, Information Technology Department, Stephen P. Clark Center, and Florida International University. Attendees came from thirteen County departments, twenty external agencies spanning from Miami-Dade, Broward, West Palm Beach, Seminole Tribe, and Jacksonville, and Florida International University.



- 3) About twenty individuals attended the presentation at the 2013 ESRI International User Conference held on July 11, 2013 in San Diego, CA.



- 4) About forty individuals attended Miami-Dade County GIS User Group meeting held on September 17<sup>th</sup>, 2013 at Stephen P. Clark building where a half-an-hour Metadata presentation was given to county departments, and cities.

**MIAMI-DADE GIS USER GROUP MEETING**

**AGENDA**

**September 17<sup>th</sup>. 2013 from 9:00 am to 12:00 pm**

1. Meet and Greet	9:00 - 9:10 am (10)
2. ESRI User Conference (Charlton Lewis)	9:10 - 9:25 am (15)
3. Metadata (Bibi Oung & Jeffery Ruiz)	9:25 - 9:40 am (15)

**METADATA (Bibi Oung & Jeffery Ruiz)**

**Metadata for  
Managers, Developers and Users**

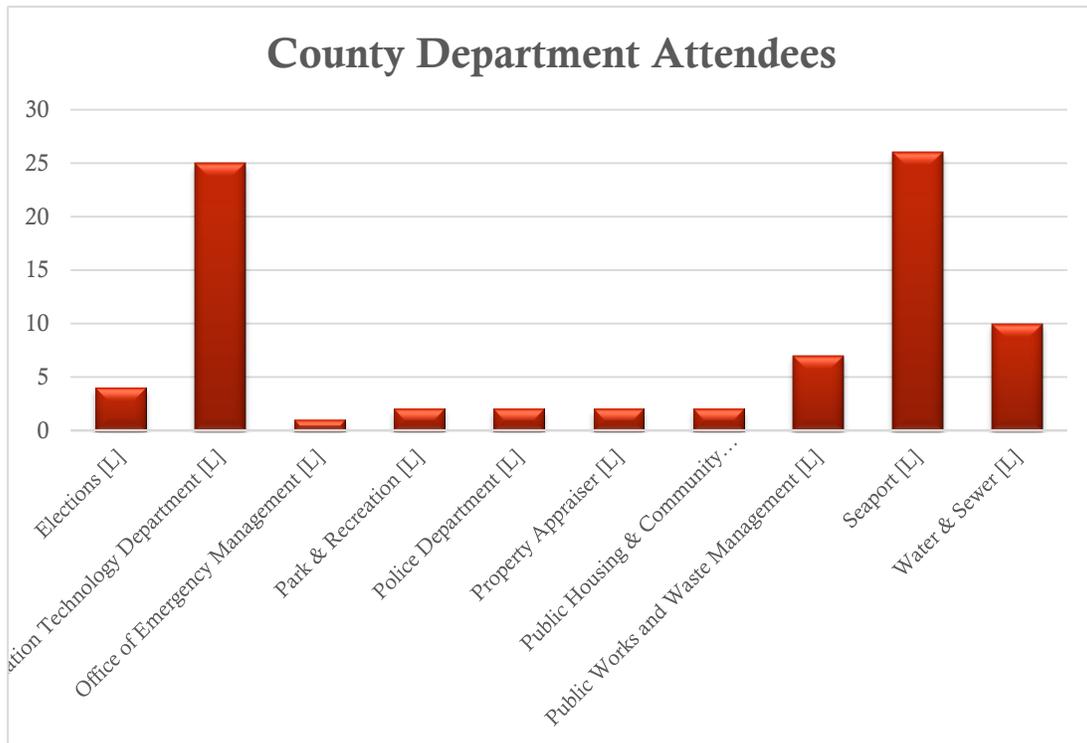
Bibi Oung  
Miami-Dade County, Florida

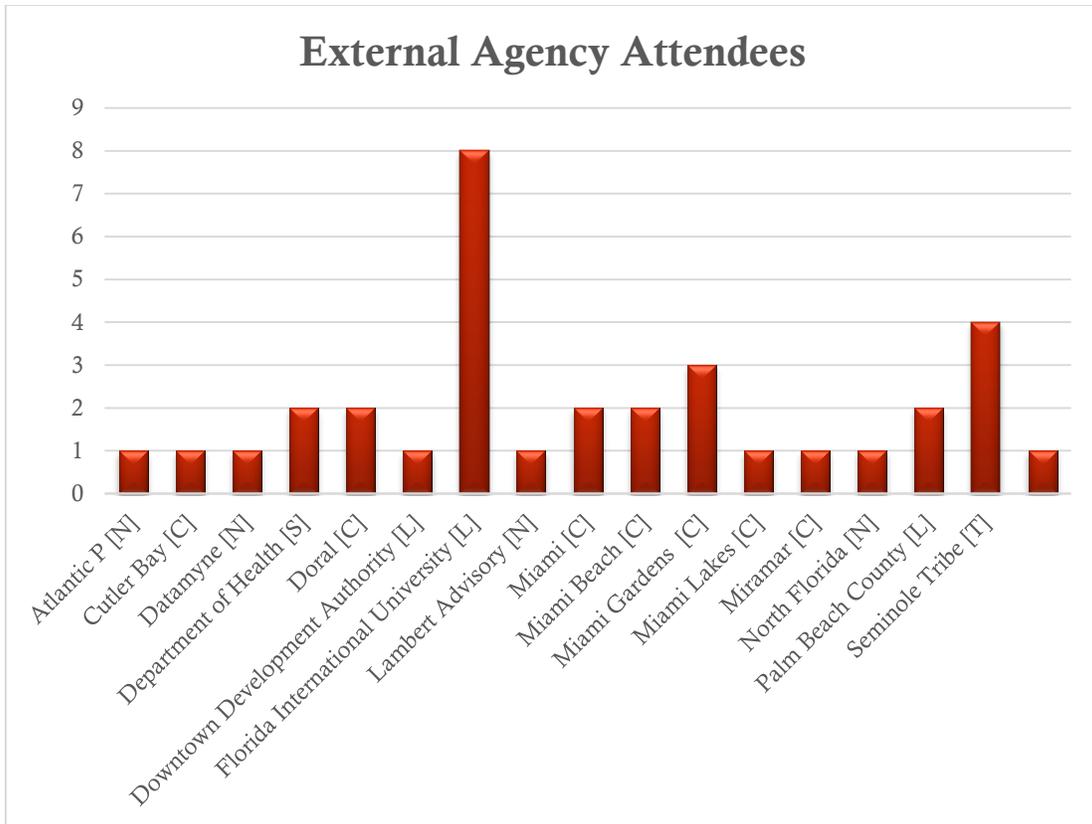
This presentation is to inform Manager, Developers and Users of the importance of GIS Metadata and address changes in the metadata industry.

5) Metadata assistance was provided to a number of individuals during the grant period.

**List organizations and organizational type (Federal, State, local, Tribal, academic, NGO, etc.) for workshop participants. List number of individuals and the agency/organization they represent receiving metadata training, and outreach assistance.**

The names of organizations along with the number of attendees per agency or department are shown below. The organizational types for workshop participants were State [S], Local [L], City [C], Tribal [T], Academic [A] & NGO [N].

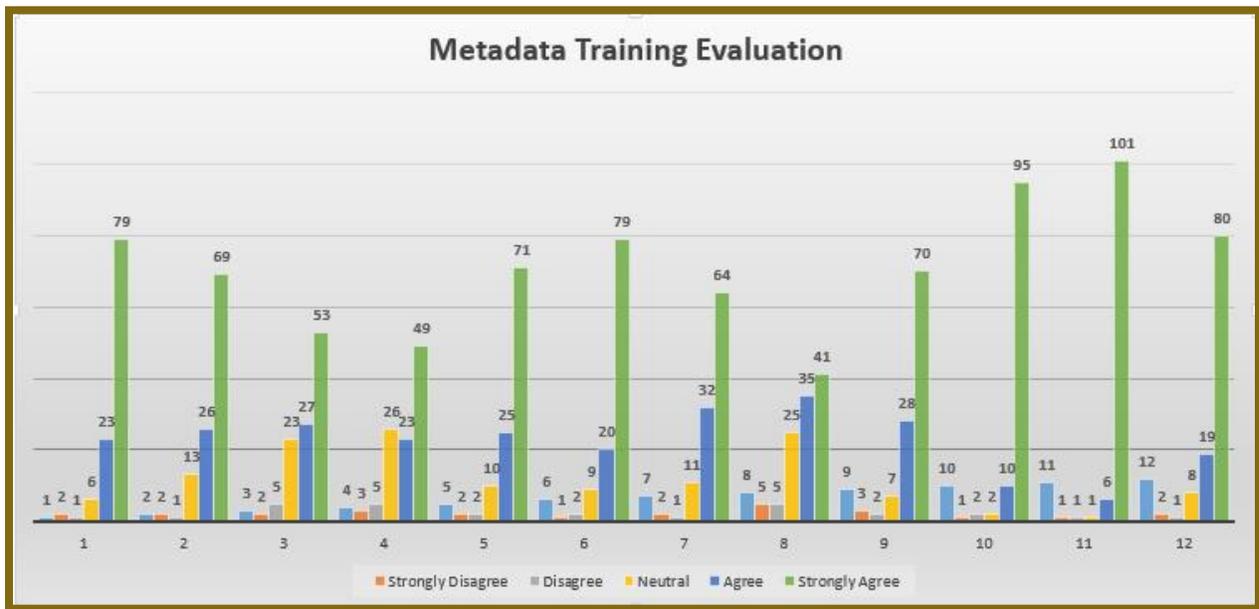




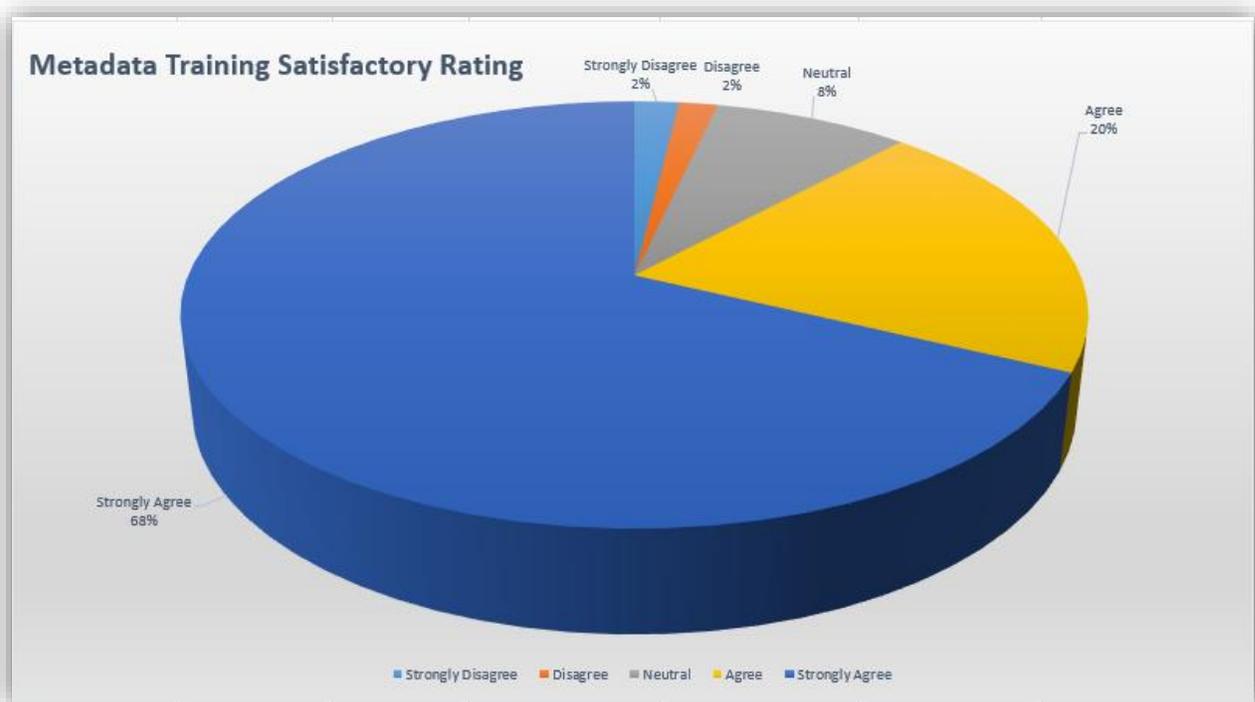
**List for each workshop the overall customer satisfaction. Customer satisfaction rating is from the NSDI training evaluation form which also provides means to evaluate trainer proficiency. The evaluation is administered after each workshop and should take as little as 10 minutes if measuring customer satisfaction alone and 20 minutes for if measuring both customer satisfaction and trainer proficiency. The evaluation form is available at <http://www.fgdc.gov/training>.**

Using NSDI Training/Workshop Evaluation Form users were encouraged to complete the survey at the conclusion of each workshop. Questions 3 and 4 on the evaluation form were not applicable at this point as it requires the individual to assess their future application and should be rephrased to: “3. The workshop *will* enable me to apply the topic in my work”, and “4. I *will be* able to share the topic taught with colleagues.”

1) NSDI Training Workshop Evaluation Form



2) Training overall satisfactory rating

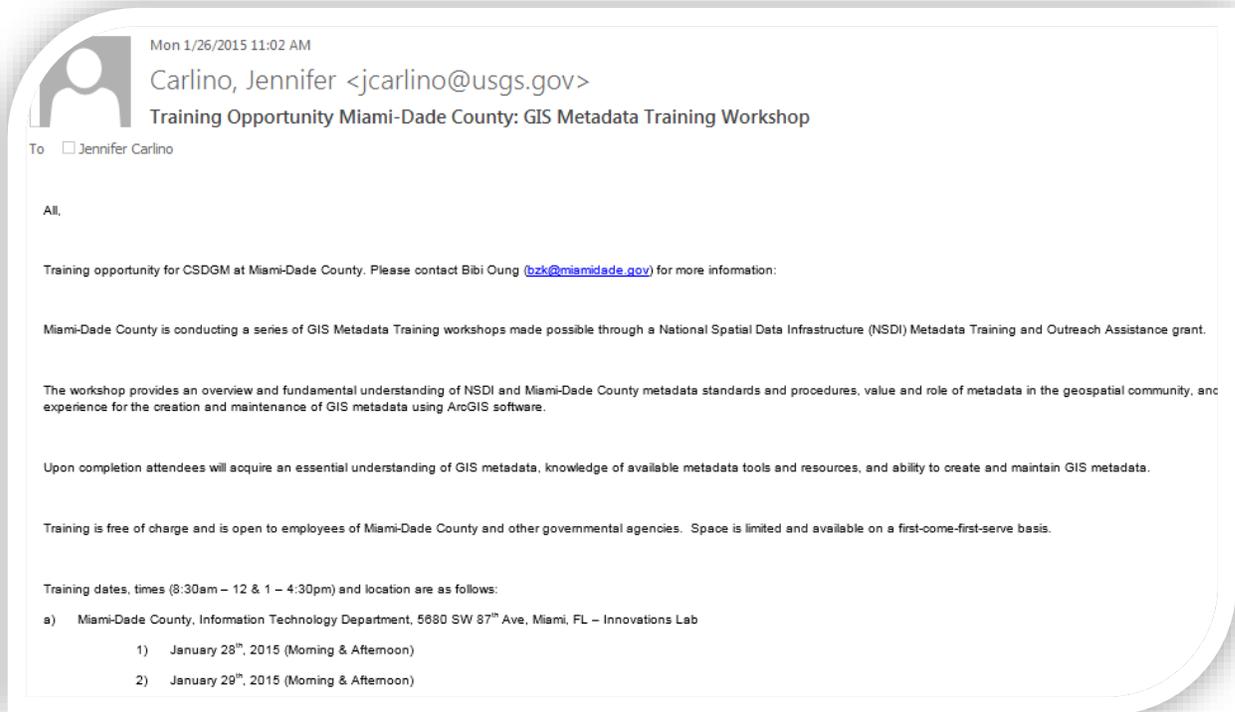


\* Excludes question 3 and 4 of the Evaluation form.

3) Feedback for question 13 – 15 can be found in Appendix F - G.

**Letters of recognition for the workshop to the awardee, publication articles regarding the workshop, external endorsement for the workshop.**

The emails received from people inquiring if they could attend the training were clear confirmation that the workshop was being recommended as emails announcing the workshop were mainly sent to supervisors or managers of external agencies/partners. An email was also sent to the metadata community by USGS as seen below:



**Describe the means of instruction: lecture only, lecture and exercises, or lecture and computer assisted.**

Training workshops conducted from January 2015 to March 2015 consisted of a lecture and hands-on exercises along with questions and answers. Nearly, each workshop was somewhat unique where additional data information and standards were discussed with attendees. Good metadata starts with good data standards. Information conveyed at the 2013 Esri International User Conference, South Florida GIS Expo, and MDC GIS User Group meeting was provided in presentation format.

**Provide the method(s) of promoting the workshop (e.g., FGDC Calendar, Listserv, etc.)**

Emails were sent to known contacts, asking them to forward the invitation to other GIS colleagues who would benefit from this free training facilitated by the FGDC grant. Additional email addresses were obtained from [Miami-Dade County Leagues of Cities](#) for all municipalities, and workshop information was emailed as seen below. Reminders were also sent out.

ung, Bibi Z. (ITD) [mailto:bk@miamidade.gov]  
c: Thursday, January 22, 2015 11:02 AM  
subject: Miami-Dade County: GIS Metadata Training Workshop

Hello,

Miami-Dade County is conducting a series of GIS Metadata Training workshops made possible through a National Spatial Data Infrastructure (NSDI) Metadata Training and Outreach Assistance grant.

The workshop provides an overview and fundamental understanding of NSDI and Miami-Dade County metadata standards and procedures, value and role of metadata in the geospatial community, and related Executive Orders. Training includes materials and hands-on experience for the creation and maintenance of GIS metadata using ArcGIS software.

Upon completion attendees will acquire an essential understanding of GIS metadata, knowledge of available metadata tools and resources, and ability to create and maintain GIS metadata.

Training is free of charge and is open to employees of Miami-Dade County and other governmental agencies. Space is limited and available on a first-come-first-serve basis.

Training dates, times (8:30am – 12 & 1 – 4:30pm) and location are as follows:

- a) Miami-Dade County, Information Technology Department, 5680 SW 87<sup>th</sup> Ave, Miami, FL – Innovations Lab
  - 1) January 28<sup>th</sup>, 2015 (Morning & Afternoon)
  - 2) January 29<sup>th</sup>, 2015 (Morning & Afternoon)
  - 3) March 5<sup>th</sup>, 2015 (Morning & Afternoon)
  - 4) March 12<sup>th</sup>, 2015 (Morning & Afternoon)
  - 5) March 19<sup>th</sup>, 2015 (Morning & Afternoon)
  - 6) March 26<sup>th</sup>, 2015 (Morning & Afternoon)
  
- b) Stephen P. Clark Center, 111 NW 1 St, Miami, FL 33128 – 17 FL Training Room
  - 1) February 4<sup>th</sup>, 2015 (Morning & Afternoon)
  - 2) February 12<sup>th</sup>, 2015 (Morning & Afternoon)
  - 3) February 18<sup>th</sup>, 2015 (Morning & Afternoon)

If you would like to attend a workshop, please let me know your preferred date and time so your seat can be reserved due to training room seat limitation.

Feel free to share this email with other governmental or municipal GIS colleagues who would like to attend a workshop.

Should you have any questions, please do not hesitate to contact me.

Sincerely,  
Bibi Oung, GIS Senior Operating System Programmer

## List new organizations engaged in this project

The list of organizations that are considered new to the GIS metadata team here at Miami-Dade County are: Datamyne, Department of Health, Florida International University, Lambert Advisory, Miami Gardens, Miami Lakes, Palm Beach County, and Seminole Tribe.

## STATUS OF METADATA SERVICE

**Indicate how and where metadata is served: NSDI registered clearinghouse node, Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) provider software, or FGDC Browse-enabled Web Directory, where metadata is in XML and harvestable through a metadata portal.**

Metadata is required for GIS layers prior to its update or addition to the county's GIS Central Data Repository (GCDR). Public layers and metadata are exported from the county's ArcSDE/Oracle environment to HTML and XML format on a weekly basis as layers are updated or published. These layers and metadata are hosted on Miami-Dade County [GIS Self Service](#) application website. In addition, Miami-Dade County publishes GIS metadata to FGDC browser-enabled web directory in XML format to <http://www.gisinventory.net/> and harvested to <http://www.data.gov/> through the GIS Inventory grant.

**Approximately how many metadata files have resulted from this project, if any?**

It is difficult to gauge accurately how many metadata files were created or improved in a distributed environment as a result of this project, because attendees were from different agencies and departments. However, six new layers and metadata were published and several layers were updated by colleagues who attended the training, and used the training material to modify the metadata. This was identified through follow-up questions.

**If any photographs, graphics, or illustrations of the project in action are highly desirable. If available, please include a few.**

Photographs, graphs and survey feedbacks were included in the Appendix A – D section. Unfortunately, we did not take picture of our fullest workshops as we were busy with attendees. Also, the PowerPoint presentations, manuals and sample data will be submitted with the final report.

## **NEXT STEPS**

**Will the project's activities continue after the award is closed?**

Miami-Dade County, Geographic Information System group will publish the documents created as a result of this grant to <http://www.miamidade.gov/technology/gis-metadata.asp> to share with the general community, registered attendees and USGS FGDC staff.

Documents will be maintained or improved through software version upgrades, and training sessions will be conducted when needed especially during software upgrades. Procedural changes will be presented through the Miami-Dade County GIS User Group forum and announcements via email and Miami-Dade County Metadata website. Attempt will be made to utilize data and metadata opportunities moving forward.

Also, a Certificate of Completion will be mailed to each attendee as seen in the Appendix E.

**What formal or informal organizational relationships established to sustain activities beyond performance period?**

Miami-Dade County has an established GIS Metadata Administrator role who enforces metadata standards for the county's production environment and plans to continue this responsibility.

**Describe the next phase in your project.**

This project is finished however, documents are being enhanced based on feedback received during the training sessions, and to include the speaker notes in the presentation. Then, documents will be published to the web site created.

### **Are there issues in metadata management and service? Do you need FGDC assistance?**

There are indeed challenges faced with metadata management and services that can only be resolved by bringing the awareness of metadata importance to upper management so it is endorsed, enforced and completed properly within each unit. FGDC assistance is always welcome, but at this point, it is a matter of promoting its awareness within our agency.

### **Requirements (more technical assistance, software, other?)**

Moving forward time and resources are needed to actively continue providing metadata training workshops.

### **What other areas need work?**

Promoting the importance of metadata throughout our organization at an upper management level as time permits.

### **What do you anticipate future metadata training, outreach, creation and posting (to clearinghouse or other locations) after the project performance period ends?**

Future metadata training and outreach assistance will be conducted as software changes and as time permits for the general improvement of Miami-Dade County's GIS production environment.

## **FEEDBACK ON COOPERATIVE AGREEMENTS PROGRAM**

### **What are the CAP Program strengths and weaknesses?**

The CAP strengths are as follows:

- 1) Ability to provide financial support through grants that enable Miami-Dade County to provide metadata training to many.
- 2) Excellent staff support, assistance and attentiveness with material, report and research material.
- 3) Regular reminders and schedule of quarterly meetings that is a platform for sharing, learning and grant status and questions.
- 4) Availability of comprehensive and easily use metadata material portal.
- 5) Platform for promoting and establishing metadata standards.
- 6) Provided the opportunity to increase and improve metadata knowledge and sharing.
- 7) Building of professional relations and better collaboration among attendees moving forward.

The weakness is keeping documents current on the site and the level of detail required for application and reports, which was time consuming.

**Where did it make a difference?**

The training made a difference in understanding the importance and benefit of quality metadata as an integral part of creating GIS data, which resulted in improved quality and completion of metadata for layers maintained in Miami-Dade County production environment. It has also elevated much of the one-on-one assistance. However, the fostering and collaboration of data exchange among our agencies and receiving the positive comments of how the metadata workshop helped their understanding made the biggest difference.

**Was the assistance you received sufficient or effective?**

The assistance received from Gita and Jen was definitely sufficient and effective as they were always willing to assist, point us in the right direction or connect us with the appropriate individual.

**What would you recommend that the FGDC do differently?**

The scope of the project was feasible and adequate, but minimizing the level of reporting and simplifying the financial aspect would be encouraging. However, it's understandable that FGDC needs the requested information to adhere to various laws and guidelines, and adequately report on grants. On another note, it would be very helpful when preparing presentation material, if administrative orders for a given state or county can be easily identified through a search on FGDC site.

**Are there factors that are missing or are there additional needs that should be considered?**

During the term of this grant no particular factors were missing. We noticed that some PowerPoint presentations need to be updated. Also, it may be helpful to put the latest metadata news or status in a section as it is vital to grants that are work in progress. The recorded presentations are great resources, but they can be time consuming.

**Are there program management concerns that need to be addressed, such as the time frame?**

No project management concerns need to be addressed from our observations as the team did great.

**If you were to do the project again, what would you do differently?**

Schedule training based on the level of ArcGIS knowledge and pace training accordingly, as some attendees found it challenging to follow the training at times. Also, host an online session now that we have experience and can conduct one confidently.

Overall, through the training, attendees from twenty different agencies and thirteen departments learned the importance of maintaining current GIS data, the disadvantage of not having proper metadata and most importantly, the benefits and cost savings when metadata is completed according

to standards. Also, this grant has encouraged us to provide metadata training workshops as needed and as time permits based on the overwhelmingly positive comments from attendees.

## APPENDIX

A) South Florida GIS Expo – October 2013



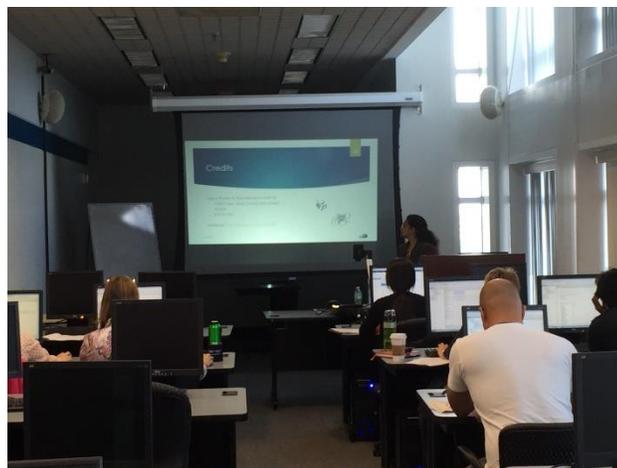
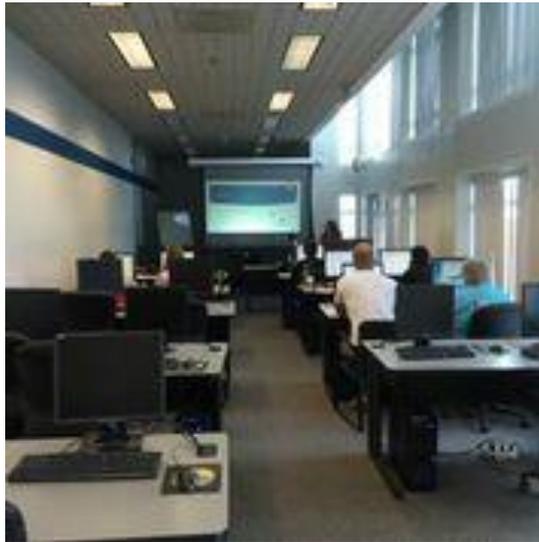
B) Miami-Dade County, Steven P. Clark Center – Feb 2015



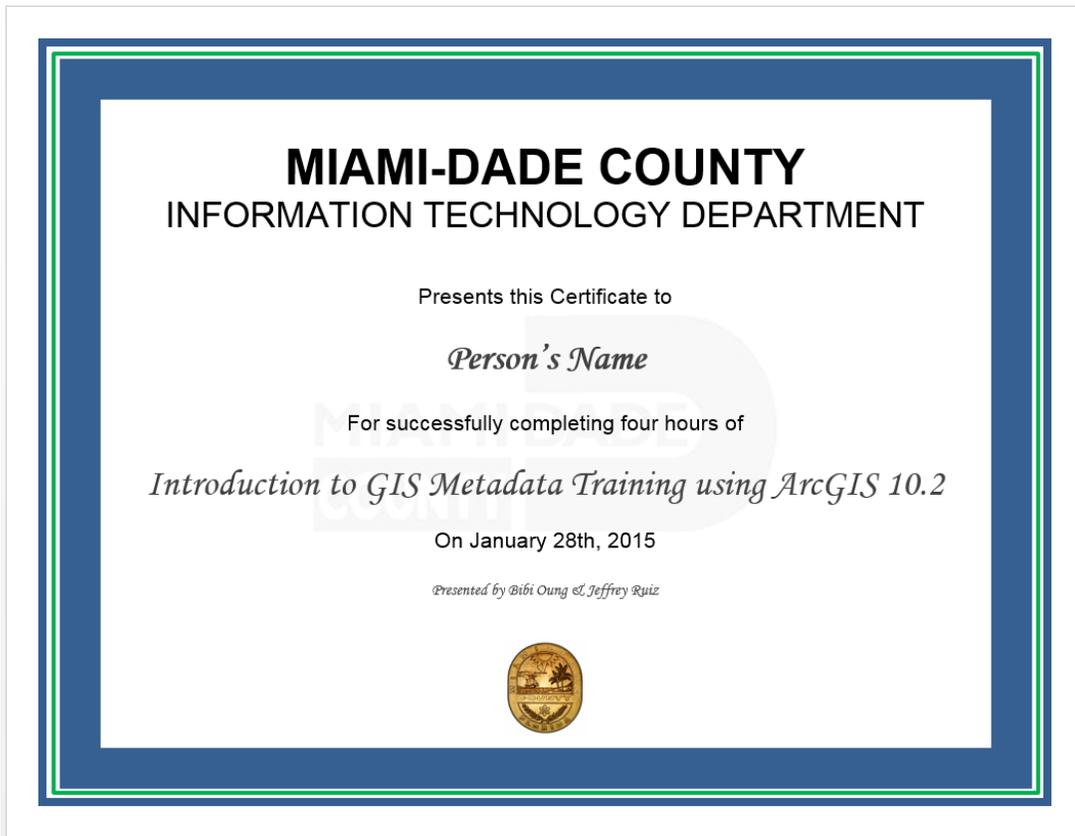
C) Miami-Dade County, Information Technology Department – January 2015



D) Florida International University (FIU) Training room (faculty and students) – March 2015



E) Attendee Certificate of Completion



F) NSDI Evaluation Form questions 13 – 14

What were the major strengths of the workshop? What was the most useful?	What aspects of the workshop could be improved and how?
13	14
Advantage of the packages work	A microphone
All information covered	Able to see in the screen was being "click"
Better understanding for Business and Commercial Application	Add an overview of Metadata in toolbox
Clarified what Metadata was and the importance	Adding more Advance Metadata Workshops
Clear explanations	Addition session where it is all hands on
Concise & straightforward	Available PowerPoint in computers, too small in screen
County students more informed	Balanced and easy to follow
Covered material in adequate time	Better handouts
Examples, systematic approach	Check all equipment prior to hand on portion
Explain the need of creating the metadata was a plus	Computer issues
Explanation of industry standards	Covered everything I need to know
Full understanding w/Metadata	Exercise will have more guidance
Good combination w/ lectures and hands on	Handout lacking many details
Good intro/information	Handouts need proofreaders
Good location, materials and knowledgeable teachers	Hard to understand Latin speaker
Good Metadata review	Hold longer courses and cover more info
Good Summary	Improve the exercises
Good Visual Tools, Hands on	In the beginning the review should be shortened
Great environment, knowable teachers	Instructions weren't clear to follow exercises
Great overview of Metadata	Interactive, More time
Hand on was perfect and useful	Interesting and enjoyed learning
Hands on and Materials	More Intro to general concepts
Hands on time, and understanding the metadata	More step by steps
Hands on training	More tour in what work you do
I learned something new about Arc Catalog	p.14 has typo (you=your)
Knowledgeable when questions were addressed	Provide link to e-training
Love the snacks	Quizzes can be introduced
Material - link	Real world use cases: problem solving. Covered somewhat
More overall in GIS not only in Metadata	Refreshments
Organization information	Set more student limit
Other resource available	Set up the computer prior to workshop
Overview, History, Importance	Split into intermediate/advance skills
Presentation was clear and useful	Step by step bigger displays
Provided best practices to create metadata in a proper manner	Step by step displays
See how much info can be useful & can be incorporated	The time logging in the computers
Share data structure w/general public	There are ok
Solid understandings	Too much intro, need more hand on learning to create a metadata
Step by step was very useful	Topic require more sessions
Taught by a 17yrs veteran of GIS standard and procedures	Very informative
Teacher was very knowledgeable	Would have liked to see examples of metadata
Understanding the process and interconnections	
Understanding the process of Metadata	
Understanding the standards used by others GIS users	
Useful information for futures GIS research	
Value of the layer and Quality of Metadata	
Very detailed	
Visual was helpful	
Way the material was created was very helpful	

G) NSDI Evaluation Form questions 15

Can the workbook, or provided handouts, be improved and how?
15
Additional sources citations
Colors will be great
Detailed
Good for the purpose
Handbook was comprehensive
Have all the metadata accurate and ready tours
Have more in-depth info for reference
More hand time on the computer
More user friendly/I was limited
Provide websites where download materials
Set of small screenshots of PowerPoint
Spelling
There is always room for improvements
Useful
Useful and informative
Very helpful
Well developed
Workshop a bit speedy for beginners